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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,596	12/05/2003	You-Pang Wei	033994-003	1556

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EXAMINER

PATEL, SHAMBHAVI K

ART UNIT PAPER NUMBER

2128

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/729,596	Applicant(s) WEI ET AL.	
	Examiner Shambhavi Patel	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/5/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by *Yuan* (US Patent No. 6,249,901).

As per **claims 1, 13, and 15**, Yuan is directed to a method for performing a timing soft error check on a simulated circuit, the method comprising the following steps:

- a. using a critical-path or full-chip circuit to be analyzed of the simulated circuit
(column 10 lines 1-2)
- b. simulating the circuit based on an initial minimum optimization parameter and an initial maximum optimization parameter (figure 11A steps 558, 560, 562, and 564; column 21 lines 17-39).
- c. calculating a minimum and maximum primary criterion parameter for each of the respective minimum and maximum optimization parameters (column 20 lines 62-67)

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- d. if the minimum and maximum optimization parameters do not indicate the same status, then:
- i. determining a new current optimization parameter (figure 11A step 570; column 21 lines 59-65)
 - ii. simulating the circuit based on the new optimization parameter (column 21 lines 59-65)
 - iii. if the simulation is successful, then performing a timing soft error check (figure 11A, 11B). When there is no convergence, the method proceeds to step A in figure 11B, which is analogous to the soft error check in the claim.
 - iv. if the simulation is not successful then determining if the primary criterion parameter is converging into a specified range (column 22 lines 42-67)
 - v. setting the current optimization parameter to a new value if the primary criterion parameter is not converging into a specified range (column 22 lines 42-67)

As per **claim 2**, Yuan is directed to the method of claim 1 wherein the new current optimization parameter is determined by averaging the minimum and the maximum optimization parameters (column 20 lines 28-34).

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As per **claim 3**, Yuan is directed to the method of claim 1 wherein the optimization parameter is set to the current minimum optimization value when the current minimum optimization value and the current optimization value indicate the same status (column 22 lines 42-67).

As per **claim 4**, Yuan is directed to the method of claim 1 wherein the optimization parameter is set to the current maximum optimization value when the current minimum optimization value and the current optimization value do not indicate the same status (column 22 lines 42-67).

As per **claim 5**, Yuan is directed to the method of claim 1 wherein the process reiterates until the primary criterion parameter converges into the specified range (figure 11A; column 22 lines 51-64).

As per **claim 6**, Yuan is directed to the method of claim 1 wherein the optimization parameter is a setup or hold time for the circuit simulation (column 19 lines 15-23).

As per **claim 7**, Yuan is directed to the method of claim 1 wherein the primary criterion parameter is a bisection error of the circuit simulation (figure 11B step 594). The parameter is the percent deviation from the bisection value.

As per **claim 8**, Yuan is directed to the method of claim 1 wherein the simulation is successful and the timing soft error check is performed as determined by a bisection goal (figure 11B step 592). The circuit is simulated based on the current bisection optimization parameter to determine the current bisection criterion parameter.

As per **claim 9**, Yuan is directed to the method of claim 1 wherein if the primary criterion parameter is converging into the specified range, then the current optimization parameter is the setup and hold time for the circuit simulation (column 22 lines 27-30).

As per **claim 10**, Yuan is directed to the method of claim 1 wherein the timing soft error check comprises:

- a. determining new maximum and minimum optimization parameters (column 22 lines 42-64). Based on the success status, the minimum and maximum parameters are replaced with the bisection value.
- b. determining a current optimization parameter based on the maximum and minimum optimization parameters and simulate the circuit (figure 11B step 592). The circuit is simulated and based on the optimization parameter, and then the current parameter is calculated.
- c. determining a current primary criterion parameter and a secondary criterion parameter from the circuit simulation (column 11B step 594). The secondary criterion parameter is analogous to the bisection error calculated in step 594.

- d. determining whether the primary criterion parameter and the secondary criterion parameter converge into a specified range (figure 11A; figure 11B).
The current maximum or minimum parameter is reset, and the method then proceeds back to that shown in figure 11A, where the step of determining whether or not there is a convergence is repeated.
- e. if the primary criterion parameter and the secondary criterion parameter converge, then saving the current optimization parameter as a setup and hold time for the circuit simulation (figure 11A steps 574 and 576; column 22 lines 27-30)
- f. if the primary criterion parameter and the secondary criterion parameter do not converge, then setting the current optimization parameter to a new value (figure 11A and 11B). If there is no convergence, the method proceeds to step A, wherein the criterion parameter is recalculated.

As per **claim 11**, Yuan is directed to the method of claim 10 wherein the current optimization value is set to the minimum optimization value if the simulations based on the current minimum and current optimization parameters indicate the same status (figure 11B steps 596 and 598).

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As per **claim 12**, Yuan is directed to the method of claim 10 wherein the current optimization value is set to the maximum optimization value if the simulations based on the current maximum and the current optimization parameters indicate the same status (figure 11B steps 600 and 602).

As per **claim 14**, Yuan is directed to the method of claim 13 comprising the step of iteratively simulating the circuit with new optimization parameters in order to determine the ideal optimization parameter (figure 11A steps 566, 568). Until both the minimum and maximum criterion parameters indicate the same status, the optimization range is repeatedly replaced with the bisection value and the steps of simulating the circuit and calculated the deviation is repeated.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shambhavi Patel whose telephone number is 571 272 5877. The examiner can normally be reached on 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shambhavi Patel
Examiner
Art Unit 2128

SP


KAMINI SHAH
SUPERVISORY PATENT EXAMINER